REMARKS

Applicant has carefully reviewed and considered the Office Action mailed on May 15, 2003, and the references cited therewith.

No claims are amended. As a result, claims 1-19, 27-29, and 32-34 are now pending in this application.

§103 Rejection of the Claims

Claims 1-3, 5-8, 10, 11, 13-19, 27-29, and 32-34 were rejected under 35 USC § 103(a) as being unpatentable over Goldman et al. (A Constraint-Based-Scheduler for Batch Manufacturing) in view of Tanaka (U.S. Patent No. 5,353,229). This rejection is respectfully traversed for several reasons.

It should be noted that one of the authors of Goldman et al., Mark S. Boddy, is also an inventor in the present application. The article represents prior work by the author, and the currently claimed invention is an improvement thereon. As previously pointed out, Goldman et al. does not teach resizing or modifying activities into smaller activities, and therefore further does not discuss scheduling both activities and smaller activities based on different types of constraints as claimed.

The Examiner also did not specifically identify in Goldman et al. where the teaching of resizing or modifying activities into smaller activities is located. MPEP § 707.07(d) provides: "Where a claim is refused for any reason relating to the merits thereof it should be 'rejected' and the ground of rejection fully and clearly stated." (emphasis added.) The Examiner merely recites the claim language, and then refers to pages 49-56 and figures 1 and 2. This is basically a cite to the entire article. Applicants have reviewed the reference in detail, and have not found the teaching referenced by the Examiner.

In Applicant's review of the reference, some barely visible lines were drawn on the reference next to a paragraph on page 54. This paragraph recites "constraining an activity either with respect to another activity or with respect to some timeline." This language clearly does not teach resizing or modifying activities into smaller activities as claimed. Also, constraining activities to occur only as needed, or placing order constraints on activities is also clearly not modifying the activities themselves.

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Tanaka discusses constraints that are expressed in the forms of equations and inequalities of linear combinations of variables (*see,* col. 1, ln. 47-49), but fails to consider resizing activities into smaller activities or scheduling both activities and smaller activities based on continuous and linear constraints. Further, the mere existence of continuous constraints in Tanaka is not sufficient to suggest their applicability to Goldman absent some express motivation in one of the references for combination with the other.

Because the references cited here fail to teach all elements of the pending claims, including both modifying selected activities into sets of smaller activities and scheduling the activities and smaller activities based on discrete and continuous constraints, the pending claims are believed to be patentably distinct from these cited references.

In response to applicant's previous arguments, Examiner cites the example of batch manufacturing in the boxes on the tops of pages 52 and 53 as showing "various levels of granularity subject to various constraints (note in addition to the breakdown of the general recipe into a site recipe and unit recipes)" Applicants respectfully traverse the assertion that a site and unit recipe are not similar in any conceivable manner to modifying selected activities into sets of smaller activities and scheduling them based on discrete and continuous constraints. A site recipe "describes how a product is made at a particular plant" Page 53 box. "Each unit recipe describes the set of operations a particular piece of plant equipment will execute" Page 53 box. There is no discussion of modifying activities into smaller activities and scheduling them based on discrete and continuous constraints as claimed.

Claims 1-11, 14, 15, 19, 27-29, 33, and 34 were rejected under 35 USC § 103(a) as being unpatentable over Zweben et al. (U.S. Patent No. 6,216,109).

While the first sentence of the Office Action only identifies Zweben et al. as the basis for the rejection, the remarks following the first sentence combine Zweben et al. with Tanaka. Applicants will treat this rejection as based on a 103(a) combination of Zweben et al. and Tanaka. This rejection is respectfully traversed.

Zweben teaches constraint-based iterative repair of a schedule for a complex activity, such that repairs are made in each iteration of a schedule until a schedule not producing a constraint violation is obtained as a result. The system is specifically designed to only repair

violated constraints and not to modify the entire preexisting schedule, minimizing perturbations of the existing schedule. Although tasks are discussed in the cited col. 14, ln. 13-20, **splitting selected tasks into subtasks is not found in the reference.**

In contrast, the pending claims recite modifying selected activities into sets of smaller activities, and scheduling both activities and smaller activities based on discrete and continuous constraints. More specifically, the invention as claimed in the pending claims involves selecting activities for division into smaller activities, modifying these selected activities into smaller activities, and scheduling both these modified or divided smaller activities along with other activities from the list of activities based on both discrete and continuous constraints.

The Office Action specifically references Col. 16, lines 4-61 in regard to the "splitting aspect". This language has been carefully reviewed, and it does not teach or suggest the splitting aspect. This language references the state of an attribute "absent change by another task... For example, a task can have an effect that changes a switch from on to off. The state effect can specify that the switch remains off until the end of the task, or the state effect can specify that the switch remains off until some other task turns the switch back on." Col. 16, lines 7-14. The referenced language further describes constraints on when a task can be performed starting at line 39. No teaching or suggestion of modifying selected activities into smaller activities has been found in the referenced language. Because the cited Zweben reference does not discuss modifying sets of activities into smaller activities and scheduling the activities and smaller activities based on discrete and continuous constraints, the claims of the present invention are believed to be patentably distinct from the cited reference. Reconsideration and allowance of the claims is respectfully requested.

Allowable Subject Matter

Claim 12 was objected to as being dependent upon a rejected base claim, but was indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6972 to facilitate prosecution of this application.

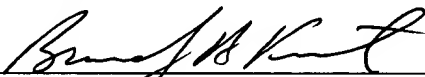If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

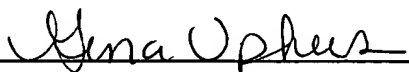MARK S. BODDY ET AL.

By their Representatives,

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Date 7-15-2003   By _____

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop AF, Commissioner of Patents, P.O.Box 1450, Alexandria, VA 22313-1450, on this 15 day of July, 2003

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Name   Signature